What is claimed is:

1. A perpendicular magnetic recording medium, comprising:

a hard magnetic recording layer;

a soft magnetic layer; and

a non-magnetic intermediate layer between the hard magnetic recording layer and the soft magnetic layer, the hard magnetic recording layer comprising:

an hcp-structured layer; and

a Co-alloy layer comprised of either a Co_3Pt-alloy layer or an hcp CoPt-based alloy layer positioned adjacent to the hcp-structured layer.

2. The recording medium of claim 1, wherein the hcp-structured layer comprises CoPtXY, where X is a grain-refining material, and Y is an element selected from the group consisting of: Ta, Cr, Nb, Mo, Si, and Ge.

3. The recording medium of claim 2, wherein the grain-refining material comprises a material selected from the group of: B, C, Zr, and Hf.

4. The recording medium of claim 2, wherein the grain-refining material comprises an oxide.

5. The recording medium of claim 4, wherein the grain-refining material comprises a material selected from the group of: SiO_2, Al_2O_3, CoO, CrO_2, and NiO_2.

6. The recording medium of claim 1, wherein non-magnetic intermediate layer comprises:

a seedlayer; and

an underlayer positioned adjacent to the seedlayer.

7. The recording medium of claim 6, wherein the underlayer comprises:

an hcp material.

8. The recording medium of claim 1, wherein the Co-alloy layer comprises:

a Co_3Pt phased material.

9. The recording medium of claim 8, wherein the Co_3Pt phased material comprises:

a $(CoCr)_3Pt$ alloy.

10. The recording medium of claim 8, wherein the Co_3Pt phased material comprises:

a Co_3Pt-based alloy including one or more of: Ta, B, Cr, Nb, Mo, Si, Ge.

11. A magnetic disc drive storage system, comprising:

a magnetic recording head having an air bearing surface; and

a perpendicular magnetic recording medium positioned adjacent the air bearing surface of the magnetic recording head;

the perpendicular magnetic recording medium comprising a hard magnetic recording layer, a soft magnetic layer, and a non-magnetic intermediate layer between the hard magnetic recording layer and the soft magnetic layer, and the hard magnetic recording layer comprising an hcp-structured layer, and a Co-alloy layer comprised of either a Co_3Pt-alloy layer or an hcp CoPt-based alloy layer positioned adjacent to the hcp-structured layer.

12. The system of claim 11, wherein the hcp-structured layer comprises CoPtXY, where X is a grain-refining material, and Y is an element selected from the group consisting of: Ta, Cr, Nb, Mo, Si, and Ge.

13. The system of claim 12, wherein the grain-refining material comprises a material selected from the group of: B, C, Zr, and Hf.

14. The system of claim 12, wherein the grain-refining material comprises an oxide.

15. The system of claim 14, wherein the grain-refining material comprises a material selected from the group of: SiO_2, Al_2O_3, CoO, CrO_2, and NiO_2.

16. The system of claim 11, wherein non-magnetic intermediate layer comprises:

a seedlayer; and

an underlayer positioned adjacent to the seedlayer.

17. The system of claim 16, wherein the underlayer comprises:

an hcp material.

18. The system of claim 11, wherein the Co-alloy layer comprises:

a Co_3Pt phased material.

19. The system of claim 18, wherein the Co_3Pt phased material comprises:

a $(CoCr)_3Pt$ alloy.

20. The system of claim 18, wherein the Co_3Pt phased material comprises:

a Co_3Pt-based alloy including one or more of: Ta, B, Cr, Nb, Mo, Si, Ge.